

## ABSTRACT

This invention provides an MIMO communication system and MIMO communication method. An MIMO receiver estimates state of each communication channel from the received signals received by #1 to #L antennas, generates feedback information according to the information of channel state, sends the feedback information to a transmitter through a feedback path, processes the feedback information in order to compensate feedback-delay of the feedback path, generate  $K \times L$  proper reception weights by using the information of channel state and processed feedback information, multiplies the received #1 to #L substreams of respective #1 to #K signal streams by the proper #1 to #L reception weights, respectively, composes the #1 to #L weighted substreams to obtain respective composed #1 to #K signal streams and demodulate the composed #1 to #K signal streams, respectively, and combines the demodulated K signal streams to reproduce an original transmission signal.